



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/520,482

09/23/2005

Shaobo Zhang

B-5633PCT 622410-7

6541

36716

7590

07/27/2007

LADAS & PARRY

5670 WILSHIRE BOULEVARD, SUITE 2100  
LOS ANGELES, CA 90036-5679

EXAMINER

PORTIS, SHANTELL L

ART UNIT

PAPER NUMBER

2617

MAIL DATE

DELIVERY MODE

07/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/520,482	Applicant(s) ZHANG, SHAOBO	
	Examiner Shantell Portis	Art Unit 2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

### *Response to Arguments*

2. Applicant's arguments filed on March 29, 2007 have been fully considered but they are not persuasive. Regarding Claim 1, the applicant argues that ***Koster does not disclose, suggest or teach, inter alia, the following features recited by amended Claim 1 of the present application:***

***"wherein said RNM, ... and allocates the mobile phone numbers in the contracted roaming network to subscribers roaming in the contracted roaming network dynamically through the MSC/VLR in the contracted roaming network and the HLR in the home network."***

The examiner respectfully disagrees. Koster discloses the IRS HLR 160 functioning as a home location register with additional logic for performing international roaming. Koster further discloses an agreement between the WSP and the roamer's HSP (HLR in the service region 165), the WSP populates the IRS HLR 160 (roaming number manager) with the MIN 228 and ESN 227 of specified HSP subscribers, including the international roamer. Therefore, the IRS HLR 160 is connected with the HSP whereas the MDN is allocated and associated with the original MIN of the foreign mobile station 100. (Col. 5, lines 32-38; Col. 6, lines 1-17 and Figure 1)

Therefore, the examiner maintains the rejection as set forth below.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6-8, 10, 11 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Koster, U.S. Patent No. 6,259,914.

**Regarding Claim 1**, Koster discloses a network for implementing localized roaming of mobile subscribers, comprising: a base transceiver station, a base station controller, a mobile switching center (MSC), a Visiting Location Register (VLR) and a Home Location Register (HLR), and at least one Roaming Number Manager (RNM); wherein said RNM (IRS HLR 160), connected with the HLR (HSP 165) in the home network and an MSC/VLR (MSC 110) in a contracted roaming network, and manages mobile phone numbers in the home network and local mobile phone numbers (MDN) in the contracted roaming network takes collection of the local mobile phone numbers in the contracted roaming network as a resource pool, and allocates the mobile phone numbers in the contracted roaming network to subscribers roaming in the contracted roaming network dynamically through the MSC/VLR in the contracted roaming network and the HLR in the home network (Col. 5, lines 52-67 and Col. 6, lines 1-17).

**Regarding Claim 2**, Koster discloses wherein said RNM is embedded in said HLR (Col. 6, lines 1-17).

**Regarding Claim 3**, Koster discloses comprising: a. configuring the RNM with local mobile phone numbers in contracted roaming network, an independent Public Switched Telephone Network/Integrated Service Digital Network (PSTN/ISDN) number and a signaling point code (Col. 3, lines 16-30); b. configuring data in entities of the contracted roaming network and entities of the home network, so that the subscriber location query message taking a local number in the roaming network as the destination address will be directed to the RNM in the home network (Col. 5, lines 32-51); c. establishing interfaces between the RNM and entities of the contracted roaming network as well as between the RNM and entities of the home network (Col. 5, lines 52-67 and Col. 6, lines 1-17); and d. developing communication services in the roaming network based on the configuration in respective entities of the contracted roaming network and the home network, implementing localized roaming of the subscriber (Col. 5, lines 15-31; Col. 5, lines 52-67 and Col. 6, lines 1-17).

**Regarding Claim 4**, Koster discloses wherein said step c comprises: c1. establishing an interface between the RNM and an MSC in the roaming network; c2. establishing an interface between the RNM and the HLR in the home network (Col. 6, lines 1-17).

**Regarding Claim 6**, Koster discloses wherein the step d3, before allocating a local mobile phone number to the subscriber, further comprises: determining by the RNM whether the roaming region where the subscriber is roaming is a contracted

roaming region; if so, allocating one from the available numbers in the contracted roaming network and feedings the allocated number back to HLR in the home network by the RNM; otherwise feeding the mobile phone number of the subscriber in the home network to HLR in the home network (Col. 6, lines 1-17).

**Regarding Claim 7**, Koster discloses wherein an incoming call or an outgoing call, is processed by using the number fed back from RNM in the home network (Col. 6, lines 30-46).

**Regarding Claim 8**, Koster discloses further comprising: informing the subscriber of the location update by voice, short message or Unstructured Supplementary Service Data (it is inherent for the MDN to be provided to the subscriber, this information is stored in the subscriber's mobile station and in its internal memory (NAM)-Col. 1, lines 44-62 and Col. 5, lines 1-14).

**Regarding Claim 10**, Koster discloses further comprising: when the subscriber leaves the contracted roaming network, (HLR) in the home network informs the (RNM) of the subscriber location update, the RNM releases the local mobile phone number, occupied by the subscriber, in the roaming network, and breaks the mapping between the number and the subscriber (it is inherent that when a subscriber leaves the roaming region that the mobile number is released back into the pool of numbers for further allocating to serve international roamers-Col. 5, lines 32-51 and Col. 6, lines 1-17).

**Regarding Claim 11**, Koster discloses further comprising: binding the local mobile phone number in the contracted roaming network to the subscriber (foreign mobile subscriber 100)(Col. 6, lines 1-17).

**Regarding Claim 14**, Koster discloses wherein the subscriber location update process also comprises: d5. informing the RNM serving the old location of the subscriber by the HLR in the home region; d6. if there is no binding relation between the subscriber and the local mobile phone number occupied by the subscriber, releasing said local mobile phone number occupied by the subscriber by the RNM; d7. sending a response from the RNM to the HLR in the home network (Col. 6, lines 1-17).

**Regarding Claim 15**, Koster discloses wherein the subscriber location update process also comprises: sending an acknowledgement for number allocation from the HLR to the RNM serving the current location of the subscriber, after receiving an acknowledgement for subscriber data (MIN and ESN) insertion from VLR (inherently part of the network architecture associated with MSC 110) (Col. 6, lines 1-17).

**Regarding Claim 16**, Koster discloses wherein the subscriber location update process also comprises: if not receiving the acknowledgement for number allocation from the HLR for a determined period, the RNM will release the allocated number (Col. 6, lines 1-17).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5, 9, 12, 13 and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koster in view of Alperovich et al. (Alperovich), U.S. Patent No. 5,978,673.

**Regarding Claim 5**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 3) as mentioned above.

However, Koster fails to disclose wherein said step d comprises a subscriber location update process: d1. sending a location update request from the VLR currently serving the subscriber to the HLR in the home network; d2. according to the location update request received from the VLR and the current location of the subscriber, addressing the RNM corresponding to the current location of the subscriber through the PSTN/ISDN number of RNM and informing the RNM of the subscriber location update, by the HLR in the home network; d3. allocating by the RNM a local mobile phone number in the roaming network, to the subscriber, and returning said number to the HLR in the home network; and d4. inserting said local mobile phone number in the roaming network into the VLR currently serving the subscriber and returning an acknowledgement message of obtaining said number in the roaming network to the RNM, by the HLR in the home network.

In a similar field of endeavor, Alperovich discloses providing location-based call forwarding within a mobile telecommunications network. Alperovich further discloses wherein said step d comprises a subscriber location update process: d1. sending a location update request from the VLR currently serving the subscriber to the HLR in the home network (MSC 30 is attached to VLR 50-Col. 4, lines 3-12); d2. according to the



location update request received from the VLR and the current location of the subscriber, addressing the RNM corresponding to the current location of the subscriber through the PSTN/ISDN number of RNM and informing the RNM of the subscriber location update, by the HLR in the home network (Col. 4, lines 13-33); d3. allocating by the RNM a local mobile phone number in the roaming network, to the subscriber, and returning said number to the HLR in the home network (Col. 4, lines 44-67); and d4. inserting said local mobile phone number in the roaming network into the VLR currently serving the subscriber and returning an acknowledgement message of obtaining said number in the roaming network to the RNM, by the HLR in the home network (Col. 4, lines 44-67).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a system for enabling the network to reroute incoming calls to the appropriate mobile switching center serving the roaming mobile subscriber and for allowing any fees to be charged to a single subscription (Col. 1, lines 12-38).

**Regarding Claim 9**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 7) as described above.

Koster fails to disclose wherein the call is processed by using the number fed back from RNM in the home network in the following manner: when acting as the caller, the subscriber uses the number fed back from the RNM in the home network to initiate a call; when the subscriber acts as the called party, if the called number is the mobile phone number in home network, the MSC in the home network queries HLR in the home network to determine the calling route, the HLR finds the corresponding

Art Unit: 2617

subscriber record, obtains address of VLR currently serving the subscriber, and accesses said VLR to obtain the calling route, with which the HLR instructs the MSC in the home network to establish a calling route; if the called number is a local mobile phone number in a roaming region, the MSC in the roaming network queries RNM about calling route information, the RNM finds the subscriber identifier, queries the HLR about the calling route information in accordance with the subscriber identifier, and forwards the calling route information returned from HLR to the MSC in the roaming network.

Alperovich discloses wherein the call is processed by using the number fed back from RNM in the home network in the following manner: when acting as the caller, the subscriber uses the number fed back from the RNM in the home network to initiate a call; when the subscriber acts as the called party, if the called number is the mobile phone number in home network, the MSC in the home network queries HLR in the home network to determine the calling route, the HLR finds the corresponding subscriber record, obtains address of VLR currently serving the subscriber, and accesses said VLR to obtain the calling route, with which the HLR instructs the MSC in the home network to establish a calling route; if the called number is a local mobile phone number in a roaming region, the MSC in the roaming network queries RNM about calling route information, the RNM finds the subscriber identifier, queries the HLR about the calling route information in accordance with the subscriber identifier, and forwards the calling route information returned from HLR to the MSC in the roaming network (Col. 3, lines 19-65).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a system for enabling the network to reroute incoming calls to the appropriate mobile switching center serving the roaming mobile subscriber and for allowing any fees to be charged to a single subscription (Col. 1, lines 12-38).

**Regarding Claim 12**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 5) as described above.

Koster fails to disclose wherein said VLR in step d1 addresses the HLR in the home network in accordance with International Mobile Subscriber identifier (IMSI) of the subscriber.

Alperovich discloses wherein said VLR in step d1 addresses the HLR in the home network in accordance with International Mobile Subscriber identifier (IMSI) of the subscriber (Col. 4, lines 13-16).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to enable the connecting telecommunications network to route the transmitted signal from the serving MSC to the HLR (Col. 4, lines 16-21).

**Regarding Claim 13**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 5) as described above.

Koster fails to disclose wherein the information carried the location update request sent from VLR to HLR in step d1 and the parameters carried in the location update informed from HLR to RNM in step d2 comprise: the IMSI of the subscriber and/or the mobile phone number in the home network, current location of the subscriber and old location of the subscriber.

Alperovich discloses wherein the information carried the location update request sent from VLR to HLR in step d1 and the parameters carried in the location update informed from HLR to RNM in step d2 comprise: the IMSI of the subscriber and/or the mobile phone number in the home network, current location of the subscriber and old location of the subscriber (Col. lines 16-21).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to enable the connecting telecommunications network to route the transmitted signal from the serving MSC to the HLR (Col. 4, lines 16-21).

**Regarding Claim 17**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 3) as described above.

Koster fails to disclose wherein said step d comprises a process for calling the subscriber with the local mobile phone number in the roaming network; said process comprising the following steps: d8. when the call is made to the subscriber with the local mobile phone number the roaming network, initiating a route query from a GMSC in the roaming network to the RNM currently serving the subscriber; d9. after receiving the query, the RNM searching for the subscriber identifier according to the local mobile phone number in the roaming network, and querying HLR in home network for about the calling route in accordance with the subscriber identifier; d10. returning the query result from the HLR in the home network to the RNM, which sends an acknowledgement for route query to the GMSC and instructs the GMSC to establish the route with the number obtained from the HLR.

Alperovich discloses wherein said step d comprises a process for calling the subscriber with the local mobile phone number in the roaming network (the GMSC 20 can be part of the PLMN 10a or 10b which either 10a or 10b can be the roaming or home network-Col. 2, lines 53-64); said process comprising the following steps: d8. when the call is made to the subscriber with the local mobile phone number the roaming network, initiating a route query from a GMSC in the roaming network to the RNM currently serving the subscriber (Col. 3, lines 19-30); d9. after receiving the query, the RNM searching for the subscriber identifier according to the local mobile phone number in the roaming network (inherent for identifying the subscriber), and querying HLR in home network for about the calling route in accordance with the subscriber identifier; d10. returning the query result from the HLR in the home network to the RNM, which sends an acknowledgement for route query to the GMSC and instructs the GMSC to establish the route with the number obtained from the HLR (Col. 3, lines 19-45).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to establish a speech connection with the mobile station (Col. 3, lines 41-45).

**Regarding Claim 18**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 3) as described above.

Koster fails to disclose wherein said step d also comprises a process for calling the subscriber with the mobile phone number in the home network; said process comprising the following steps: d11. when the call is made to the subscriber by using the mobile phone number in the home network, initiating a route query from a GMSC in

the home network to the HLR in the home network; d12. after receiving the query, requesting the VLR currently serving the subscriber to allocate a temporary routing number according to the mobile phone number of the subscriber in the home network by the HLR in the home network; d13. allocating, by the VLR currently serving the subscriber, a temporary routing number to the subscriber, and returning said temporary routing number to the HLR in the home network; d14. sending an acknowledgement for route query from the HLR in the home network to the GMSC in the home network, and instructing the GMSC to establish a route with the allocated temporary routing number.

Alperovich discloses wherein said step d also comprises a process for calling the subscriber with the mobile phone number in the home network (the GMSC 20 can be part of the PLMN 10a or 10b which either 10a or 10b can be the roaming or home network-Col. 2, lines 53-64); said process comprising the following steps: d11. when the call is made to the subscriber by using the mobile phone number in the home network, initiating a route query from a GMSC in the home network to the HLR in the home network (Col. 3, lines 19-30); d12. after receiving the query, requesting the VLR currently serving the subscriber to allocate a temporary routing number according to the mobile phone number of the subscriber in the home network by the HLR in the home network (Col. 3, lines 19-45); d13. allocating, by the VLR currently serving the subscriber, a temporary routing number to the subscriber, and returning said temporary routing number to the HLR in the home network (Col. 3, lines 19-45); d14. sending an acknowledgement for route query from the HLR in the home network to the GMSC in

Art Unit: 2617

the home network, and instructing the GMSC to establish a route with the allocated temporary routing number (Col. 3, lines 19-45).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to establish a speech connection with the mobile station (Col. 3, lines 41-45).

**Regarding Claim 19**, Koster discloses the method for implementing localized roaming of mobile subscribers according to (see claim 3) as described above.

Koster fails to disclose wherein said step d also comprises a process of sending a short message to the subscriber with the local mobile phone number in the roaming network; said process comprising the following steps: d15. sending a short message from a Short Message Service Center SC to a Short Message Service Gateway Mobile Switching Center SMS (GMSC), which initiates a route query to the RNM; d16. on receiving the query, searching for the subscriber identifier according to the local mobile phone number in the roaming network, and querying the HLR in the home network about the route with the subscriber identifier, by the RNM; d17. returning the MSC number or a Service GPRS Supporting Node (SGSN) number currently serving the subscriber from the HLR in the home network to the RNM; d18. sending an acknowledgement for route query from the RNM to the SMS GMSC, to instruct the route for the short message with the MSC number or the SGSN number obtained from the HLR in the home network, and issuing the short message by the SMS GMSC.

Official Notice is taken in that the same procedure for establishing a call connection with the roaming subscriber according to Alperovich mentioned above can

also be applied when sending short messages. It would have been obvious to also include short messages to provide for a variety of well known fast and easy options for communicating.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bharatia et al., U.S. Patent No. 6,615,037 discloses a method apparatus and system for call forwarding when roaming from a first type network to a second type network in a communication system.

Houde et al., U.S. Patent No. 5,978,678 discloses a cellular telephone network routing method and apparatus for internationally roaming mobile stations.

Uchiyama et al., U.S. Patent No. 5,884,169 discloses a roaming mobile communication system and method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shantell Portis whose telephone number is 571-272-0886. The examiner can normally be reached on Monday-Friday 7:00am-3:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
SLP

  
LESTER G. KINCAID  
SUPERVISORY PRIMARY EXAMINER